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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Hiroshi UENO

Title: ATM MULTIPLEXING
              APPARATUS AND CELL
              DISCARD METHOD

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Art Unit: 2664

AMENDMENT AND REPLY UNDER 37 CFR 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the Office Action mailed March 25, 2004, please amend the above identified application as follows:

015.638726.1

In the Written Description:

On page 1, paragraph beginning at line 14,

An ATM network communication system has become popular as service for integrally conducting data communication including voice and text data, further image data requiring high-speed transmission. In the ATM network communication system, cell discard processing is performed in order to protect an ATM transmission band from an ATM cell caused by abnormality etc. of subscriber ~~terminals.The~~terminals. The cell discard processing is carried out mainly by an ATM switching unit and an ATM multiplexing apparatus.

On page 2, paragraph beginning at line 15.

Functions necessary for the ATM multiplexing apparatus 301 and 303 include a UPC (Usage Parameter Control) function. An object of the UPC function is to prevent congestion in an ATM network by checking whether the ATM cell flow from the subscribers violates a contract band or not. In order to efficiently share a band of an ATM transmission line with all the subscriber signals, the UPC to input signals of each subscriber line before multiplexing needs to be performed. However, installation ~~ofthis~~ of this UPC units 309 and 311 increases the cost per subscriber line. On the other hand, when SVC (Switched Virtual Connection) service for performing dynamic signal setting is adopted, traffic setting information set by signaling needs ~~to be~~ is passed between the ATM switching unit and the ATM multiplexing apparatus. Passing of the traffic setting information can be managed by installation of a communication line for management, but the amount of processing of the ATM multiplexing apparatus increases.

On page 2, paragraph beginning at line 27.

In the conventional ATM network system as shown in Fig. 11, the ATM multiplexing apparatus 301 provides the UPC units 309 for every subscriber line inside the units, so that the cost of installation increases. The UPC unit 311 is installed inside of the ATM multiplexing apparatus 303 to monitor a signal after multiplexing in a lump, so that the cost of installation of the UPC unit 311 decreases. Even in the case of installing any of the ATM multiplexing apparatus 301 and 303, traffic information from a traffic processing control part

211 is transferred from the ATM switching unit 201 to the ATM multiplexing apparatus 301 and 303 through traffic information transfer means 213. The traffic information transfer means 213 ~~means~~ provides communication between respective unit control parts. Coping with the traffic information transfer means 213 requires the increase in the cost of the ATM multiplexing apparatus 301 and 303.

On page 8, paragraph beginning at line 4.

The ATM switching unit 101 comprises a switch part 103, UPC (Usage Parameter Control) units 105, and a traffic processing control part 107. The switch part 103 switches the direction of signals (ATM cells) from subscribers. The switched signals are connected to an ATM network through the ATM transmission lines A. The UPC units 105 monitor whether multiplexing signals ~~112~~ 122 from the ATM multiplexing apparatus 109 violate the contracted traffic or not. The traffic processing control part 107 responds to the signaling connection request (not shown) from the subscribers and performs connection processing of the requested connection.

On page 9, paragraph beginning at line 1.

The multiplexing part 113 performs multiplexing processing to ATM cells from the respective cell filters 117 and generates a multiplexing signal ~~112~~ 122. The multiplexing part 113 detects a congestion state if the amount of retention of the received ATM cells from the subscribers exceeds the preset threshold. The detected congestion state is generated as a warning signal 129 (Fig. 2). The ~~discardcontrol~~ discard control part 115 pairs off with the cell filter 117 and they are provided corresponding to the number of subscribers.

On page 10, paragraph beginning at line 10.

The storage means 119 stores the received ATM cells from the subscribers. The comparison means 121 holds the preset threshold. The comparison means 121 generates the warning signal 129 on the basis of the degree of occupancy in the storage means 119 of the ATM cells stored in the storage means 119 and the preset threshold. The warning signal 129 provides the level value corresponding to the preset threshold. Also, the storage means 119

generates the warning signal 129 indicating a congestion state if the above degree of occupancy exceeds the preset threshold. As described below, if the threshold, for example, is set to "1/2", the warning signal 129 is generated as "0" or "1". Also, if a plurality of the thresholds, for example, are set to "5/8", "3/4" and "7/8", the warning signal 129 provides the level values of "000", "001", "011" or "111". The readout control part 123 sequentially reads out the ATM cells stored in the respective storage means 119, and transmits the ATM cells to the ATM transmission lines B as the multiplexing signal ~~112~~122. In the present invention, a readout control method is not limited.